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EXAMINER

CADUGAN, ERICA E

ART UNIT

PAPER NUMBER

3722

DATE MAILED: 11/19/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,926

Applicant(s)

HOBBS, STEVEN MICHAEL

Examiner

Erica E Cadugan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 22-36 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 37-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 22-36 and 40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Specification

2. The disclosure is objected to because of the following informalities: on page 15, for example, Figure 4 is referred to and described multiple times. However, it does not appear that Figure 4 shows what page 15 says that it shows, for example, page 15 teaches that “as seen in Figure 4 six nodes 28, 30, 32, 34, 36, 38 are associated with the track 26” and also teaches that “[t]his radius is marked on each of the circles 40, 42, 44, 46, 48, 50 in Figure 4”.

Appropriate correction is required, of these, and all similar occurrences.

Claim Objections

3. Claims 14 and 39 are objected to because of the following informalities: in claim 14, line 2, “centred” should be --centered--; claim 39 appears to be missing some commas (e.g., line 7, “said path said processing circuitry”, note: not the only such instance in claim 39). Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 5-19 and 39 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a track planner that associates track(s) around the perimeter of an object to be machined, wherein the or each said track comprises a locus of all the possible material remover paths around the object *for a particular constraint or set of constraints* (emphasis added), does not reasonably provide enablement for a track planner arranged to associate one or more tracks (or contours) around the perimeter of an object to be machined, wherein the or each said track or contour comprises a “locus of all the possible material remover paths around the object”. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Specifically note that “**all** the possible material remover paths” includes all possible paths for any and all possible material removers, which includes an infinite number of tool paths, and not just all possible material removal paths that a particular material remover is capable of traversing based on, for example, the size or cutting radius of the tool. Thus, one skilled in this art would not be enabled to figure out how to use the processing circuitry to determine the material remover path, since one must be able to first determine the possible material remover paths before one can determine the actual material remover path.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-21 and 37-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 1-21 and 37-39 are replete with instances that do not particularly point out and distinctly claim the subject matter of applicant's invention. Examples of these instances are listed below, but these instances are not limited to the listed examples. Applicant is advised to closely review the claims for other occurrences.

In claim 1, and similar limitations in claims 38-39, it is unclear as claimed what is meant by "and in determining said path said processing circuitry allowing said depth of cut made by the material-remover to vary". Specifically note that it is unclear whether or not the claim is setting forth that the material-remover, as it moves along its path, varies its cutting depth, or whether the claim is setting forth that the processing circuitry has the *capability* of varying the depth of cut of the material-remover (regardless of whether or not the depth of cut actually varies as the tool is moved), or something else entirely.

There are several positively recited limitations that lack sufficient antecedent bases in the claims. Examples of this are: "the machine" in claim 2; "the inside" in claim 10; "the outside" in claim 11; "the track" in claims 9-11, for example; "the curve" in claim 13 (note that claim 12 sets forth a curve "with each of the nodes" which could encompass plural curves as claimed, and thus "the curve" lacks sufficient antecedent basis); "the node" in claim 13; "the track" in claim 14; "the radius" in claim 14 (not inherent that the curve(s) in question has/have only one radius); etc. This is not meant to be an all-inclusive list of such occurrences. Applicant is required to review the claims and correct any other such occurrences of limitations lacking sufficient antecedent basis.

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As set forth in the claim, it is unclear in claim 5 whether the “object to be machined” is different from the previously-described “material that is being processed”. A similar situation exists in claim 6, for example.

Claim 7 sets forth that “the track planner produces tracks that are of variable width”. This limitation is unclear. Note that it is unclear as claimed whether the produced tracks, which are positively set forth in the claim, are of a *varying* width (i.e., actually have a width that varies along the track length), or whether the track planner is merely *capable* of producing tracks of varying widths.

In claim 8, “the track and/or contour that has been calculated” lacks sufficient antecedent basis in the claim. Firstly, note that no “contour” was previously set forth at all, and secondly, note that no track and/or contour “that has been calculated” was previously set forth. See also similar occurrences in claim 9, noting that in claim 9, “the track and/or contour” lacks sufficient antecedent basis for the additional reason that previously set forth was “one or more tracks”, i.e., plural possible tracks.

In claim 9, it is unclear as set forth in the claim via the lack of a modifying article whether or not the “points” set forth in line 2 are different from, or a subset of, the “predetermined points” previously set forth.

In claim 14, it is unclear as set forth in the claim if “one or more curves” is intended to be a subset of the curve or curves previously set forth in the claim.

The term “close” in claim 16 is a relative term which renders the claim indefinite. The term “close” is not defined by the claim, the specification does not provide a standard for

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ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

In claim 16, is it unclear as claimed what is meant by “such that the radius of the curve passes close to the node”. Note that it is unclear as claimed whether a straight line passes “close to the node” or whether the radiused portion, i.e., an arcuate portion, passes “close to the node”.

In claims 18 and 37, it is unclear as claimed to what “it” refers.

In claim 37, it is unclear precisely what is being claimed. Note that claim 37 sets forth a computer readable medium coded with instructions “that when loaded into a machine tool cause it to function as claimed in claim 1”. However, claim 1 is directed to an apparatus, specifically to a “machine tool having a material remover”, and not to a method with function or process steps, thereby rendering it unclear what is encompassed by claim 37.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 21, and 38, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 3,641,872 (Ulfhielm).

Ulfhielm teaches a device including a rotary milling cutter 9 (see Figure 6, also col. 2, lines 49-50, for example). The device is used to produce a finished article 5 having a surface 6 of a predetermined contour from a solid blocklike workpiece 7 (col. 2, lines 19-22, Figures 1-2, 4, and 6). Note that a numerical controller having “processing circuitry” is used to govern or

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“determine” the path along which the tool moves (col. 5, lines 20-39, also col. 2, lines 73-75, for example). Additionally, note that the “depth” of cut varies (Figures 2, 4, and 6). Note specifically that since the shown finished article 5 with the surface 6 is machined from a solid block 7, the cutting depth must inherently vary at some points in order for the shape of surface 6 shown in Figure 2, for example, to result.

Regarding claim 21, note that Figure 6 shows plural paths.

10. Claims 1-7, 21, and 37-38, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 4,833,617 (Wang)

Wang teaches a device for machining a workpiece with a milling tool (col. 2, lines 51-52, for example). The depth of cut during the machining varies (col. 5, lines 34-36, for example). Note that Wang also teaches the use of an NC control device or “processing circuitry” to determine the tool path (col. 3, line 9 through col. 4, line 56, for example).

Regarding claim 4, note that Wang teaches that a constant speed can be used (col. 6, lines 52-55).

Regarding claims 5-6, note that the area cut has a perimeter (Figure 5), and that in order for the tool to remove the material from that perimeter, a “track”, “contour”, or path must inherently be determined from all the possible paths within that perimeter.

Regarding claim 7, note that it is considered inherent that tool paths of different widths are “able” to be produced by changing the width of the tool, for example. Additionally, see col. 5, lines 29-37, noting that $dx dy$ is the area of a cut pixel, which appears to be “variable” via the fact that it is expressed in a variable expression. If the area of a cut pixel is variable, the “width” is thus variable.

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Regarding claim 21, see Figure 5.

Regarding claim 37, col. 7, lines 25-35 specifically teach the use of software running on a minicomputer and also teaches downloading to the CNC controller.

11. Claims 1-3, 5-12, 15-21, and 37-39, as best understood, are rejected under 35

U.S.C. 102(b) as being anticipated by DE 19624131 ('131).

U.S. Patent Publication 2001/0043842 is an English-language equivalent to '131, and is being relied upon for a translation thereof. Thus, all references to column, line, or paragraph numbers are to the '842 U.S. published application.

'131 teaches a processor that determines a tool path (paragraph 0009, for example) for guiding a rotating tool 14 (see claim 17, and Figure 4, for example) to remove an enclosed area from a workpiece (see Figure 5, for example). Additionally, note that '131 teaches that the cutting depth varies (see paragraph 0008, last three lines, and claim 4, for example).

Regarding claims 5-6, note that the tool path is determined within a perimeter or contour (see Figure 5, for example), and note that the area to be removed within that contour or perimeter includes a "locus of all the possible material remover paths" that can be used to remove that particular area.

Regarding claim 7, note that different widths of areas are "able" to be removed. Also, note that '131 teaches varying width (paragraph 0038, for example). Also, different sized tools are used (paragraph 0036), which different-sized tools produce different width paths or tracks (paragraph 0036, for example).

Regarding claims 8-9, note that each of the corners of the tool path can be considered a "node" or "point" as claimed (see Figure 5).

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Regarding claim 10, note that there are many corners of the tool paths 17, 19, 20, for example, (see Figure 5) shown, located within the desired contour 9 or “track”, and thus located at the “inside” of the track.

Regarding claim 11, note that tool path 12 is located at or close to the desired contour 9 and is thus at the “outside” of the contour or “track” 9 (see Figure 5), and note that the path 12 has corners or “nodes”.

Regarding claim 12, note that curved paths 23 have been “associated” with each of the “nodes”, i.e., the points of intersection of the two curved portions forming path 23, shown in Figure 8.

Regarding claim 15, note that the left-most curve of path 23 as viewed in Figure 8 has two “nodes” located at the points of intersection of that curve with the right-most curve as shown in Figure 8.

Regarding claim 16, as best understood, it appears that the arcuate portions of 23, as well as any radius line that can be drawn to a center of any arc or the arcuate portions, intersect the aforescribed “nodes” and thus pass “close” thereto.

Regarding claim 17, note that the curved portions shown in Figure 8 have sections that are “portions of circles” and that are “associated” with the aforescribed “nodes”, see Figure 8.

Regarding claims 18-19, note that there is a path tangent to and extending between upper and lower arcuate portions of, for example, the left portion of path 23 (see Figure 8).

Regarding claim 37, note that ‘131 teaches the use of a computer program to process information so as to yield data for controlling an engraving tool along a tool track (see paragraph 0009, for example).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 13, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19624131 ('131) as applied to claims 1, 5, 8, and 12 above.

U.S. Patent Publication 2001/0043842 is an English-language equivalent to '131, and is being relied upon for a translation thereof. Thus, all references to column, line, or paragraph numbers are to the '842 U.S. published application.

'131 teaches all aspects of the claimed invention as described in the above rejection based thereon, and does teach that the contour can be a desired shape, but does not specifically teach that the radius of a curve, such as the curved path 23, has a radius "corresponding to the minimum radius of a path of the material remover of the machine tool" as set forth in claim 13.

However, it would have been an obvious matter of design choice to make the different portions of the curve of whatever size was desired or expedient to an end user, depending on the contour desired by the end user, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

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Allowable Subject Matter

14. Claim 14, as best understood, would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first and second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

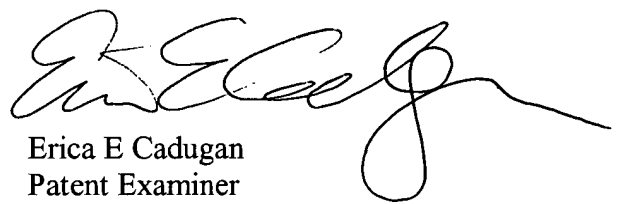
Faxing of Responses to Office Actions and Contact Information

16. In order to reduce pendency and avoid potential delays, TC 3700 is encouraging FAXing of responses to Office Actions directly into the Group at (703) 872-9306. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into TC 3700 will be promptly forwarded to the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica Cadugan whose telephone number is (703) 308-6395. The examiner can normally be reached on Monday through Thursday from 7:30 a.m. to 5:00 p.m., and every other Friday from 7:30 a.m. to 4:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A.L. Wellington can be reached at (703) 308-2159. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 3700 receptionist whose telephone number is (703) 308-

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1148.

A handwritten signature in black ink, appearing to read 'Erica E Cadugan', with a long horizontal flourish extending to the right.

Erica E Cadugan
Patent Examiner
Art Unit 3722

eec
November 14, 2003